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19 July 1955

MEMORANDUM FOR:  Special Devices Division

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THROUGH : Assistant Chief/TSS/Research & Development  
Assistant Chief/TSS/Technical Aids

SUBJECT : Burial Packaging Study

REFERENCE : Memorandum for AC/TSS/R&D from   
Special Devices Division, dated 23 May 1955.

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TSS/ED has prepared the following answer to the above referenced memorandum. Material has been drawn from the files and experience of TSS/ED and also Ordnance Materials Section and Corps of Engineers Packaging Laboratory. A great deal of information was supplied by  Office of Logistics/Supply Division and represents material currently stocked by the Agency.

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1. Sizes and costs of thermostatically controlled hot plastic dip tanks.

1.1 Office of Logistics/Supply Division reports it is currently using three sizes of tanks. All tanks are thermostatically controlled.

Model 318 is a small round tank. The opening is 8" wide by 12" deep, operates on 110 volts and holds about 7 lbs. of plastic. The cost is approximately \$185. Tanks of this type can be obtained in smaller or larger diameter.

Model 3612 is the medium size tank. It has a dipping area 36" long and 12" wide and 12" deep, and operates on 220 volts single phase current. It is equipped with a circulating pump and the prewet area can be converted into part of the dipping area by removing the dam. The cost is approximately \$1,000 and has a capacity of approximately 100 lbs.

Model 6012 is the large tank for use at permanent installations and operates on 220 volts three phase current, has time clock, circulating pump, and has a capacity of approximately 600 lbs. of plastic. The cost is approximately \$3,000.

1.2  is currently using:

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Model No. 7BR20  
7 x 20 x 12 inches deep  
220 volt, single phase, 2,300 watts  
Made by Seal-Peel Corp.

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Cost: \$387.12

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1.3 [ ] of Logistics uses:

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Model No. 715 CL  
 7 x 15 x 12 inches deep  
 110 volt, single phase, 60 cycle  
 Made by Seal-Peel Corp.  
 Cost \$785.00

1.4 TSS [ ] uses a small circular dip tank, and it is felt that this tank is the smallest practical tank for caching preparations.

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Model SPZ  
 3½ Gal., 3000 watts, 220 volts  
 10½ inches diameter x 10 inches deep  
 \$144.85 for 220 V - 1 phase  
 \$184.85 for 220 V - 3 phase  
 Made by Fidelity Chemical Products  
 Fidelity Chemical Products makes a complete line of circular and rectangular dip tanks

1.5 The following companies have been recommended by Ordnance for purchase of hot dip tanks:

D. C. Cooper Company, Chicago, Ill.  
 Walter Kidde Company, Belleville, N. J.  
 Electric Heater Co., Stratford, Conn.  
 Youngstown Miller Co., Sandusky, Ohio  
 Fidelity Chemical Products, Newark, N. J.

2. Cost and gauge of aluminum foil for conform wrapping.

2.1 Logistics/Supply Division states that they do not recommend the use of aluminum foil without reinforcement except on very special occasions. The material is very brittle and will puncture easily. It is not heat-sealable except by special equipment. When used, it is suggested that the normal household type be purchased locally. It comes in two thicknesses, 1 and 1½ mils.

2.2 Ordnance uses Aluminum foil made to conform to MIL-A-148A. This Specification has a range of thicknesses. Ordnance states that 4 mils is often used by them as a packaging material.

2.3 Reynolds Metal Corp. states that it produces foil to conform to MIL-A-148A and recommends various thicknesses for different weights of objects. Type I, 3 mil, heavy duty, and Type II, 2 mils, medium heavy duty, seem most applicable to Agency needs. Reynolds suggests that trial wraps be made where possible to determine the proper thickness.

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2.4 Two grades of material can be purchased currently in local stores. Regular grade Reynolds Wrap or equivalent is 1 mil thick and comes in a 25 foot roll, 12 inches wide for \$.25 per roll. Heavy duty aluminum foil wrap is  $1\frac{1}{2}$  mils thick and comes in 25 foot rolls, 18 inches wide for \$.55 per roll. TBS/MS has found the heavy duty ( $1\frac{1}{2}$  mil) material to be successful in hot dip preparations and in general superior to 1 mil foil. TBS/MS also recommends that sample wraps be made to determine the correct foil gauge.

### 3. Cost and weight on unbleached muslin:

3.1 Unbleached muslin 2.6 oz. is carried in Supply Division stock in bulk form and in two sizes of sock form to fit rifles and pistols. Cost of the bulk is approximately \$.12 per yard.

3.2 The [redacted] uses material they term "Stockinette" that conforms either to Federal Specifications, CCC-S-271, Sheetting, Cotton, Bleached, Wide or CCC-S-291, Sheetting, Cotton, Unbleached, Wide. Both of these materials are used under MIL-P-1168, Preservation, Methods Of.

25X1

### 4. Source, cost, and gauge of non-wicking cord:

4.1 There is carried in Supply Division stock, 12 thread nylon cord in 1 lb. cones at \$3.25 per cone.

4.2 Ordnance recommends purchase of cord under MIL-S-12091 (GSS), String, Water Repellent, Non-Wicking (For Use With Strippable Protective Compounds).

### 5. Source and cost of hot dip plastics.

5.1 Plastics are carried in stock of Supply Division. They recommend that this material be ordered from stock and not bought on the open market as all plastics are not the same. Type II under JAN-C-149, Stock Number 8030-005-4841, is clear and is used for normal long term storage. Type II with fungicide, Stock Number 8030-005-4842, should be used on all caching projects in lieu of plain (except where the copper or oil will effect the material being cached). At the present time there is no greenhouse or dry plastic available on the market. The Seal Peel Company that developed this material is now in bankruptcy and is unable to furnish this material to us. Cost of type II clear is \$.56 per lb. Cost of type II with fungicide is \$.94 per lb.

5.2 Ordnance has supplied a Military Qualified Products List of Products Qualified Under Military Specification JAN-C-149. Manufacturers and products acceptable to Ordnance

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as type II material are listed.

5.3 A German material was tested by Ordnance and found acceptable under type II, JAN-C-149. It was Preservant 22/VI made by Kasika Chemische Fabrik.

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[Redacted]  
Chief  
TSS/Engineering Division

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23 May 1955

MEMORANDUM FOR: Assistant Chief/TSS/Research & Development

THROUGH :

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SUBJECT : Burial Packaging Study

It is requested that the following data be developed by 1 July 1955:

1. Sizes and costs of thermostatically controlled hot plastic dip tanks recommended by you.

2. Cost and gauge of aluminum foil for conform wrapping. I found Reynolds household foil to be an efficient weight for this work. Source of foils requested, too.

3. Cost and weight of unbleached muslin recommended for conform wrapping. Source also.

4. Source, cost, and gauge of non-wicking cords, nylon, glass, or what have you, which will handle easily and not break when knotted.

5. Source and cost of hot dip plastics recommended. Please include all types, i.e., oil exuding (like HR-45 of Seal Peel), less oil (HR-49 dry Seal Peel), and that treated to resist bacteria.

6. Other items knowledgeable to you which would comprise a basic packaging unit.

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